



# The Effect of Cost Suppression Under Universal Health Insurance on the Allocation of Talent and the Development of Expertise: Cosmetic Surgery in Japan

## Citation

J. Mark Ramseyer, The Effect of Cost Suppression Under Universal Health Insurance on the Allocation of Talent and the Development of Expertise: Cosmetic Surgery in Japan, 52 J.L. & Econ. 497 (2009).

## Published Version

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Source: *Journal of Law and Economics*, Vol. 52, No. 3 (August 2009), pp. 497-522

Published by: [The University of Chicago Press](#) for [The Booth School of Business of the University of Chicago](#) and [The University of Chicago Law School](#)

Stable URL: <http://www.jstor.org/stable/10.1086/592005>

Accessed: 24/07/2013 10:45

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# The Effect of Cost Suppression under Universal Health Insurance on the Allocation of Talent and the Development of Expertise: Cosmetic Surgery in Japan

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## Abstract

Japanese national health insurance provides universal coverage. This system necessarily entails a subsidy that dramatically raises the demand for medical services. In the face of the increased demand, the government suppresses costs by suppressing prices. Through biographical and income data on more than 4,000 Tokyo physicians, I explore the effect of this price suppression on the allocation of talent and the development of expertise. Crucially, this national health insurance does not cover services—like elective cosmetic surgery—deemed medically superfluous. Facing price caps in the covered sector but competitive prices in these “superfluous” sectors, the most talented doctors disproportionately shift into the “superfluous” sectors and there invest heavily in their expertise: cosmetic surgeons are more likely than other doctors (more likely even than noncosmetic plastic surgeons) to have attended a more selective medical school, to have served on a medical school faculty, to be board certified, and to earn high incomes.

## 1. Introduction

Through a complex set of subsidies, the Japanese government supplies universal health insurance. These subsidies necessarily boost demand, and the increased demand should raise prices. As prices rise, so should aggregate health costs. Yet health costs in Japan are low. Among the wealthy industrialized countries, they border on the lowest.

The Japanese government suppresses costs by suppressing prices. Every other

I gratefully acknowledge the helpful comments and suggestions of Omri Ben-Shahar, John Campbell, Eric Feldman, Tom Ginsburg, John Haley, Ryotaro Kato, Daniel Kessler, Curtis Milhaupt, Sam Peltzman, Marc Rodwin, Chiaki Sato, Mark West, an anonymous referee, and participants in workshops at the American Law and Economics Association, Harvard University, University of Michigan, University of Pennsylvania, and University of Tokyo. I thank the East Asian Legal Studies Program, the Petrie-Flom Center for Health Law Policy, and the John M. Olin Program in Law, Economics, and Business of Harvard Law School for generous financial assistance.

[*Journal of Law and Economics*, vol. 52 (August 2009)]

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year, it sets the prices it will pay for medical services, devices, and pharmaceuticals, and it sets them low. One consequence of this strategy is straightforward: physicians depreciate quality. In a wide variety of ways, they lower the quality of the services they provide and allocate their services by queue. The effect is well known among specialists, and I do not focus on it here.

Yet the price suppression has another effect as well: it shapes the allocation of talent and the development of expertise. Necessarily, it affects the career choices physicians make and the investments they make in their human capital. Crucially, the Japanese insurance system covers all services deemed medically necessary—but only those services. As a result, doctors face suppressed prices for any “necessary” services they sell but competitive prices for medically “superfluous” work such as cosmetic treatments. Disproportionately, the most talented doctors should opt to sell in the medically superfluous sector, where they can obtain competitive prices; the least talented doctors should stay in the medically “necessary” sector with its heavily subsidized demand curve; and the doctors in the “superfluous” but competitive sector should invest more heavily than others in specialized expertise and in the certification of that expertise.

To test this logic, I collect biographical information on all 495 Tokyo physicians advertising cosmetic procedures (cosmetic surgeons).<sup>1</sup> I then compare these men and women against several other groups of Tokyo physicians: (a) a randomly sampled group of Tokyo physicians in the Japan Medical Association (JMA; about 500 doctors), (b) all Tokyo JMA physicians in the same age cohort as the bulk of the cosmetic surgeons (about 2,200 doctors), (c) all board-certified JMA Tokyo physicians (about 1,100 doctors), and (d) all Tokyo JMA physicians offering noncosmetic plastic surgery (about 100 doctors).

The data confirm what economic logic suggests. Japanese cosmetic surgeons are more talented and better trained than other Japanese physicians—more talented and better trained even than plastic surgeons not advertising cosmetic procedures. They are more likely to have attended one of the more prestigious public medical schools. They are more likely to have been appointed to the faculty of a medical school. And they are more likely to invest the time necessary to become board certified.

Given the talent and expertise they bring, cosmetic surgeons also earn high incomes. They earn more than other doctors generally. They earn more than other doctors in their age cohort. And they even earn more than noncosmetic plastic surgeons.

## 2. The Health Care System

### 2.1. Universal Health Insurance

The Japanese government adopted the current national health insurance scheme in the early 1960s. The economy was growing rapidly, but so was the

<sup>1</sup> I use the term “cosmetic surgeon” solely for expositional convenience. In this article, it includes physicians offering nonsurgical cosmetic procedures (for example, dermatological treatments).

electoral threat posed by the socialist and communist Left. In their bid for power, these leftist parties championed European welfare state policies. Strategically, to trim their appeal, the conservative government fashioned from existing government health plans a universal health insurance scheme of its own.

In the more than 40 years since its adoption, the scheme has evolved, but several sets of insurance plans lie at its core. One set of policies, covering 30.6 million people in 2004 (Kameoka 2005, pp. 8–13), comprises a network of employer-based plans at large firms. Within this network—mandatory for all firms that fall within its scope—employers pay insurance premiums on behalf of their employees. Through the insurance, those employees and their dependents then obtain most health care. A second program covers employees at smaller firms (35.9 million). Still other plans cover the self-employed, the unemployed, the retired, and so forth.

The insurers under these plans range from private firms (for the larger employers) to the Japanese government (for smaller employers) to municipal governments (for the self-employed and the unemployed). Copayments run from 10 to 30 percent, depending on the plan, but were capped in the mid-2000s at 140,000 yen (at the close of 2005, \$1.00 = 118 yen) plus 1 percent of the excess over 466,000 yen (less is charged for low-income patients). Because the government uses revenue from the employer-based plans to pay for the others, cross subsidies are large (Kameoka 2005, pp. 8–13, 42).

Through this national health insurance, Japanese obtain a wide panoply of services. Of the 31 trillion yen in 2001 health care costs, outpatient charges made up 41 percent of that total, and hospitalization costs added another 37 percent (Nakamura 2006, p. 32). Personnel costs (for example, doctors and nurses) constituted 49 percent of the health care costs, and pharmaceuticals added another 20 percent. Patients under age 65 generated 46 percent of the health care costs, and those over 75 consumed 35 percent (Nakamura 2006, pp. 19, 32).

Every other year, the Ministry of Health, Labour, and Welfare (MHLW) publishes an elaborate price schedule. It minutely details the prices providers may charge for medical, hospital, and pharmaceutical treatments. In setting the prices, its bureaucrats primarily negotiate with the JMA (Campbell and Ikegami 1998, chap. 6). These prices are mandatory. For services billed under the national health insurance, providers may not charge more. Other than a few exceptions for services like private hospital rooms, neither may they charge patients supplementary amounts.

And the set prices are low. According to Campbell and Ikegami (1998, p. 147), the leading study of the Japanese health care industry, the prices average about a quarter of the reimbursement rates in the United States. Apparently, this system does keep costs down. As of 2003, the Organisation for Economic Co-operation and Development estimates that Japan spent 8.0 percent of its gross domestic product on insured health care. Canada spent 9.9 percent, France spent 10.4

percent, Germany spent 10.9 percent, and the United States spent 15.2 percent (Nihon iryo seisaku kiko 2007, pp. 246–47).<sup>2</sup>

Given the inevitable variation in medical service quality, basic logic suggests that high-quality physicians and high-reservation-price patients should selectively supplement the set prices with side payments. They may. According to one estimate, patients pay about 389 billion yen in bribes, or about 1.3 percent of the total health expenditures (Campbell and Ikegami 1998, p. 5). Because these payments go to the few most talented physicians, they may constitute a sizeable fraction of income for those who receive them. For the patients who pay them, they would obviously constitute a considerable burden as well.

A few patients and doctors do abandon the system entirely. The law does not stop physicians from charging higher prices if patients will forgo the insurance and pay the full amount out-of-pocket. Increasingly, they do. Unfortunately, clinics that do not bill the government do not appear in the government statistics. A few clinics catering to expatriates have operated outside the system for years. Those with a domestic clientele have now begun to do so as well.

## 2.2. Physicians and Hospitals

*Licensure.* Over 259,000 licensed physicians practice in Japan (2004 data; Nihon iryo seisaku kiko 2007, pp. 232–33). At 2.0 doctors for every 1,000 potential patients, this figure falls below those for comparably wealthy countries: 2.1 for Canada, 2.3 for the United Kingdom, 2.4 for the United States, 3.4 for France, and 3.4 for Germany (Nihon iryo seisaku kiko 2007). Physicians, in short, are few.

Incumbent doctors complain of excess supply, but physicians are scarce because the government limits entry. As in the United States, would-be physicians must first enter a university medical department. Once admitted, they study 6 years and take a national licensing examination. Approximately 88 percent of the graduates pass, and this number indicates that the bottleneck is the medical school requirement rather than the licensing exam.<sup>3</sup> Before opening a practice, new doctors then work at least 2 years in a hospital-based residency program (Ishi ho [Physicians act], Law No. 201 of 1948, sec. 16-2).

*Incomes.* Japanese physicians earn modestly high incomes. According to the MHLW,<sup>4</sup> in 2005 salaried physicians earned a mean of 10 million yen. At the end-of-the-year conversion rate of 118 yen to the U.S. dollar, that figure translates to perhaps \$90,000. In the United States (according to the U.S. Bureau of Labor

<sup>2</sup> On the problems in international comparisons of health care expenditures, see Berndt et al. (2000).

<sup>3</sup> For more on passage rates, see Dai 101 kai ishi kokkashiken gakko rankingu sokei hen [101st National physician examination, rankings by school, totals] (<http://venacava.seesaa.net/article/37185957.html>).

<sup>4</sup> See Ministry of Health, Labour, and Welfare (MHLW), Chingin kozo kihon tokei chosa [Basic statistical survey of wage structure], as reported on Nenshu rabo [Salary laboratory] ([http://www.nenshu-labo.com/sikaku\\_isya.htm](http://www.nenshu-labo.com/sikaku_isya.htm)).

Statistics),<sup>5</sup> a new pediatrician in 2004 could expect a median income of \$133,000; an anesthesiologist with over a year's experience could expect \$322,000.

Among Japanese physicians, those who make the most run their own private hospitals or clinics. In effect, they sell expensive hotel stays (typically to elderly patients) at government expense. Predictably, given the incentives involved, they keep their patients hospitalized longer than do physicians elsewhere. In 2004, doctors kept the mean in-patient stays at 36.3 days in Japan, but at barely 13.4 days in France, 10.4 days in Germany, 7.2 days in the United Kingdom, and 6.5 days in the United States (Nihon iryo seisaku kiko 2007, pp. 242–43).

Because many physicians run pharmacies in their clinics, they also profit on the drugs that they prescribe (again at government expense). Predictably, observers complain that physicians prescribe too often. Aggregate levels do remain in line with international levels: U.S. patients spent \$702 per capita in 2003 on pharmaceuticals, the French spent \$582, the Japanese spent \$509, Germans spent \$468, and Canadians spent \$453 (Nihon iryo seisaku kiko 2007, pp. 217, 247, 253). Yet because the government may negotiate low prices from the pharmaceutical firms, the low aggregate figures may disguise the large quantities consumed.

*New Clinics.* Disproportionately, these doctors with private hospitals and clinics are old. They are not old because—in the language of a Stanford University study—younger physicians are not “interested in clinic-based medicine,” because “the escalation of land prices in Japan has made the creation of clinics by young doctors financially prohibitive,” or because young doctors “are attracted to . . . sophisticated medical equipment” at the bigger hospitals (Yoshikawa, Bhattacharya, and Vogt 1996, p. 27).

Instead, the doctors with the hospitals and clinics are old because of regulation. Nominally to limit hospitalization costs, the Japanese government in 1985 capped the number of hospital beds per medical district. As of 2005, only 10 prefectures out of 47 had fewer beds than were allowed. All others remained beyond their allowed capacity. Tokyo was 6 percent above its cap (106,000 beds with only 100,000 allowed), and Osaka was 16 percent above the cap (Kokuritsu shakai hosho jinko mondai kenkyujo 2006, p. 428, table 229). In effect, the hospital bed cap bans new construction in most areas.

*Public Hospital Doctors.* Some of the most talented doctors in Japan work at university and government hospitals. Over the course of their careers, however, many of these doctors too will shift into the private sector for the higher incomes. At public-sector hospitals, they simply cannot earn as much as they could at their own institutions. To earn higher incomes, they eventually need to run their own clinics or hospitals.

Individual biographies (see, for example, Iji koron sha 2004) detail this dynamic. Many clinic owners came to their clinics from a career at a public-sector

<sup>5</sup> See U.S. Bureau of Labor Statistics, *Occupational Outlook Handbook, 2008–09 Edition* (<http://www.bls.gov/OCO>).

hospital. Before the ban on new beds, they could build their own clinics. In the years since the ban, in most cities they must buy an existing clinic, build a bedless clinic, or move beyond the national insurance system altogether.

*Quality Degradation.* For what they receive under this system, Japanese patients nurse a long litany of complaints. Most represent predictable consequences of a regulatory regime that pairs fixed prices with heavy subsidies.<sup>6</sup> Given that this is a study in resource allocation rather than quality degradation, I will not focus on these effects. Typically, however, patients complain about one or more of the following four phenomena.

First, waits are long. Because the government limits the number of physicians, subsidizes the cost of medical services, and suppresses the prices paid to doctors, physicians allocate their services by queue. Most doctors take no appointments and treat all patients on a first-come, first-served basis. When patients do make appointments, it avails them little. According to a 2005 MHLW survey, only 45 percent of the patients who arrive at a hospital without appointments see a doctor within 30 minutes, and another 23 percent see a doctor within the next 30 minutes. With an appointment, the fraction able to see a doctor within 30 minutes rises only to 53 percent. Patients typically consider physician quality to be the highest at the biggest hospitals, and there they wait even longer. At the largest hospitals, only 22 percent of patients without appointments see a physician within 30 minutes, with another 22 percent seeing one in the next 30 minutes. Thirty-two percent wait 1–2 hours, and the remaining quarter wait over 2 hours.<sup>7</sup>

Second, visits are short. Again, because the government limits the supply of physicians, subsidizes purchases, and suppresses prices, physicians maximize their incomes by seeing as many patients as possible per day. This strategy, of course, is equivalent to spending as little time with each patient as possible. According to a common Japanese adage, “You wait 3 hours for a 3-minute consultation.” An exaggeration to be sure, the adage nevertheless captures the gist of a situation that Japanese patients encounter routinely.

Third, facilities are poor. To be sure, doctors will invest in equipment if the reimbursement rates pay them a return on their investments. Yet if they can fill their days at the specified rates with poor rather than attractive facilities, they will offer poor facilities. And they do.

Last, specialization is minimal. A Stanford study declared that “[s]pecialty board certification does not exist in Japan” (Yoshikawa, Bhattacharya, and Vogt 1996, p. 27). The study overstated the point but came remarkably close to the truth nonetheless. There are indeed boards that certify doctors in Japan, but because physicians can fill their days at government-mandated rates without specializing, few bother (more discussion on this point below). Instead, a majority

<sup>6</sup> Obviously, readers should not take this discussion as somehow implying that the U.S. market is one of perfect competition. For a survey of the industrial organization of the U.S. health care industry, see Dranove and Satterthwaite (2000, p. 1093).

<sup>7</sup> For more on waiting times in hospitals, see Shinsatsu made no machi jikan [Wait time until examination] (<http://www.mhlw.go.jp/toukei/saikin/hw/jyuryo/05/kekka2.html>).



of Tokyo JMA members in 2004 (61 percent of the randomly sampled data set described below) advertised themselves as specialists in at least two areas and often many more. Many advertised services in combinations of fields—like internal medicine and surgery—that most physicians would not consider even remotely related.

### 3. Implications for Talent and Expertise

#### 3.1. *The Logic*

Consider how this universal insurance might skew the allocation of talent and the development of expertise. The insurance does not cover all procedures. Instead, it excludes those elective procedures thought medically most unnecessary. In effect, it bifurcates the medical services industry into the covered (non-competitive and medically necessary) sector and the noncovered (competitive and medically superfluous) sector. Within the covered sector, it suppresses prices and subsidizes demand, and physicians respond by degrading quality and allocating service by queue. Within the noncovered sector, physicians allocate service by quality and price.

For two reasons, this situation creates an incentive for the best doctors to shift into the medically least necessary sectors and to invest in skills and facilities at higher rates than do their peers. First, in the competitive sector, prices vary by physician quality, but in the covered sector they do not. As a result, the most talented physicians could conceivably earn higher returns in the competitive sector through the higher prices they could charge. The less talented would earn more in the subsidized, price-controlled sector.

Second, in the competitive sector, physicians can earn a market return on many investments in human and physical capital. If consumers value specialized expertise highly enough, under competition physicians will find it worthwhile to acquire the expertise. If consumers value the certification of that expertise, physicians will find it worthwhile to obtain the certification. And if consumers value attractive facilities, physicians will find it profitable to build high-quality clinics.

Three potentially observable implications follow. First, when physicians sell their services in a competitive market, they will offer the talent and the level of expertise, certification, and facilities that they can profitably provide at the price patients are willing to pay. Second, when they sell their services in a market characterized by subsidized demand and suppressed prices, they will present less talent and offer lower levels of investment in human and physical capital. Last, if the most talented doctors shift to the competitive sector and there make greater investments (as the first two hypotheses suggest), then observed incomes should be higher in the competitive (noncovered) sector than they are in the price-controlled (covered) sector.

### 3.2. *Cosmetic Surgery*

Crucially, the Japanese national health insurance excludes cosmetic procedures. To be sure, it covers corrective operations for a child burned in a fire or a passenger disfigured in a car crash. It does not cover cosmetic surgery for otherwise healthy people.

Despite this exclusion from the national system, Japanese physicians do sell cosmetic services. According to the MHLW, only 715 physicians practice in the field, and only 239 of them do so in Tokyo (2004 data; Kosei rodo sho 2006, p. 183). But the MHLW collects data only on services covered by the national insurance. Among cosmetic surgeons, it counts only those who handle the insured burn treatments, surgeries related to accidents, and other medically necessary procedures.

If you use Google to search for “cosmetic surgery,” though, you find that 440 physicians advertise cosmetic surgery on the World Wide Web in Tokyo alone. If you use Google to search for the two professional associations of cosmetic surgeons, you find that one has 667 members nationally and the other boasts 987.<sup>8</sup> A business-consulting group recently estimated this market at 195 billion yen (Yano keizai kenkyujo 2006, p. 39).

These doctors offer a wide range of procedures. One of the cheapest and most common involves eyelids. Westerners tend to have a crease in their eyelids, while Japanese do not. Over the past 2 decades, many Japanese (particularly women) have added that crease through surgery. The price of the operation varies. At the massive (34 outlets nationwide) Kanagawa Clinic chain, creased eyelids cost (depending on the method used) as little as 60,000 yen (\$484) or as much as 250,000 yen.<sup>9</sup>

Although the Kanagawa Clinic offers stylish Web sites and facilities, it does not succeed by style alone. It also offers expertise. Its lead physician, Katsumi Izawa, has performed over 15,000 eyelid operations. His colleague Katsuyuki Yoshitane reports 16,000. Its head of LASIK surgery, Yoshihiro Kitazawa, came to the clinic from the faculty of the prestigious Tokyo Medical and Dental University. By 1996, he had already done 17,000 LASIK operations. He supervised 28 other physicians at the clinic’s Tokyo LASIK center, and its Osaka branch employed another 21. In the notoriously certification-free Japanese health care industry, all 50 were board-certified ophthalmologists.

## 4. Data

To explore more systematically the effect of universal health insurance on the allocation of talent and the development of expertise, I couple a physician’s

<sup>8</sup> For information on the Japan Society of Aesthetic Surgery, see its Web site (<http://www.jsas.or.jp>). For information on the Japan Society of Aesthetic Plastic Surgery, see its Web site (<http://www.jsaps.com>).

<sup>9</sup> For more information on the Kanagawa Clinic, see its Web site (<http://www.kanacli.net>).

biographical information with data on his or her income tax liability (see Section 4.1). I collect this material on (i) all physicians who advertise Tokyo-area cosmetic services (about 500 doctors; see Section 4.2), (ii) a random sample of Tokyo members of the JMA (about 500 doctors; see Section 4.3), (iii) all Tokyo JMA members in the same age cohort as the cosmetic surgeons (about 2,200 doctors; see Section 4.3), (iv) all board-certified Tokyo JMA members (about 1,100 doctors; see Section 4.3); and (v) all Tokyo JMA noncosmetic plastic surgeons (about 100 doctors; see Section 4.3).

#### 4.1. *Income*

To measure physician incomes, I take from government records the income tax each physician paid in 2004 (Tokyo shoko risaachi 2005). This information is available only for the highest income taxpayers (HIT). The amount of tax a person needs to pay to trigger this public disclosure has varied over the years, but in 2004 it was 10 million yen (at the end-of-2004 exchange rate of 102.68 yen per dollar, this was about \$97,000). Because Japanese marginal tax rates peak at 37 percent (Shotoku zei ho [Income tax act], Law No. 33 of 1965, sec. 89, as amended by Shotokuzeito futan keigen sochi ho [Act for measures to reduce the burden of the income and other taxes], Law No. 8 of 1999),<sup>10</sup> a person paying \$97,000 in taxes would have made about \$390,000. After 2005, this tax information is no longer available. Under the new privacy statute, the government may not publish the HIT list (Kojin joho no hogo ni kansuru horitsu [Act relating to the protection of personal information], Law No. 57 of 2003). My 2004 data thus represent the last available installment of this information.

In 2004, some 73,000 Japanese paid the 10 million yen or more in taxes that landed them on the list. For the physicians in this group, I know the amount of taxes they actually paid. For physicians not on the list, I know that they paid less than 10 million yen.

As a source of information, tax records inherently present several limitations. First and most obviously, taxpayers have an incentive to underreport. With a top marginal bracket of 37 percent, the incentive is strong. Although the Japanese tax and prosecutors' offices punish cheaters severely, my data will still include some doctors who hide income.

Second, the amount of underreporting will vary with a physician's practice. If a doctor bills the national health insurance, the government (as payor) will maintain records on most of the doctor's revenue. If he or she offers elective cosmetic surgery, the physician need never enter that income on the accounting books. As a result, the tax data should reflect relatively accurately the income of most of the doctors in the sectors covered by the national insurance. It may significantly understate the income of the cosmetic surgeons.

Last, to the extent that physicians earn returns from their outside investments,

<sup>10</sup> My colleagues and I detail the calculations involved in Nakazato, Ramseyer, and Rasmusen (2006a, 2006b).

their taxable income will overstate their returns from medicine. Because the oldest physicians will have accumulated the greatest wealth, they will also earn the most investment income. As a result, the fraction of taxable income from a medical practice should fall with age.<sup>11</sup>

#### 4.2. *Cosmetic Surgeons*

Cosmetic surgeons differ from other Tokyo doctors along several dimensions. First, cosmetic surgeons are young. The field itself is new, and the age of its specialists reflects this. According to the MHLW, the number of cosmetic surgeons (practicing within the ambit of the national insurance) doubled from 1984 to 1994 and doubled again by 2004 (Kosei rodo sho 2006, p. 46).

The data in Table 1 compare the age distribution of all Tokyo physicians (the information is available in aggregate form in Kosei rodo sho [2006]) with the distribution of cosmetic surgeons. The median male Tokyo physician is 45–49 years old; the median Tokyo cosmetic surgeon is 40–44. Seventeen percent of male Tokyo physicians are 65 or older; only 8 percent of the male Tokyo cosmetic surgeons are that old.

Second, women are more likely than men to choose to practice cosmetic surgery. As in the United States, women in Japan disproportionately shoulder the burden of child care and housework. Predictably, they choose specialties with fewer emergency procedures: ophthalmology, dermatology, and anesthesiology (see Tables 2 and 3). At least outside the national insurance system (which covers burn and traffic accident patients), cosmetic surgery similarly involves few emergencies. Among all Tokyo doctors, women are over 60 percent more likely than men to become cosmetic surgeons (random sample; discussed in Section 4.3).

Unfortunately, the nature of this project prevents me from assembling more than 1 year's data. Because cosmetic surgeons operate outside of the national insurance system, the government does not collect data on them. Because membership is voluntary, neither do the professional associations. To locate physicians hoping to sell cosmetic surgery, I thus turn to the World Wide Web, on which most cosmetic surgeons advertise.<sup>12</sup> The constantly updated nature of the Web, however, prevents me from retrospectively collecting data on physicians who sold cosmetic surgery in the past. Unfortunately, the recent privacy protection

<sup>11</sup> For further information on the income tax system and these data, see the more detailed discussion in Nakazato, Ramseyer, and Rasmusen (2006a, 2006b). Even if a physician paid the full amount of taxes owed, he or she could skirt its disclosure through one of two tactics. The doctor could pay a penalty and submit the return late. On its list, the tax office included only those high-income taxpayers who filed within 2 weeks of the March 15 return deadline. By filing after April 1, the doctor could avoid publication of his or her name. Alternatively, the doctor could file an initial return that included only income below the amount that triggered disclosure and then submit an amended return with the remaining income. The tax office compiled its list from the initial returns, and, thus, a doctor could avoid publication of his or her name this way as well. I do not know how many taxpayers used either strategy.

<sup>12</sup> I located 440 Tokyo physicians advertising cosmetic procedures on the World Wide Web. I included an additional 55 physicians who listed themselves in the Japan Medical Association (JMA) directory as offering cosmetic procedures.

Table 1  
Age Distribution of Tokyo Physicians

Age	All		JMA Members		Cosmetic Surgeons	
	Male	Female	Male	Female	Male	Female
≤ 24	41 (.2)	38 (.5)	0 (0)	0 (0)	0 (0)	0 (0)
25–29	2,448 (9.2)	1,645 <sup>a</sup> (20.7)	0 (0)	0 (0)	10 (3.7)	8 (9.9)
30–34	3,433 (12.9)	1,512 (19.1)	1 (.2)	4 (5.8)	24 (8.8)	15 (18.5)
35–39	3,340 (12.6)	1,114 <sup>b</sup> (14.0)	10 (2.2)	5 (7.2)	32 (11.7)	25 <sup>a,b</sup> (30.9)
40–44	3,663 <sup>a</sup> (13.8)	951 (12.0)	43 (9.3)	5 (7.2)	72 <sup>a,b</sup> (26.4)	16 (19.8)
45–49	3,404 <sup>b</sup> (12.8)	725 (9.1)	54 (11.6)	10 (14.5)	53 (19.4)	9 (11.1)
50–54	2,578 (9.7)	480 (6.1)	52 (11.2)	10 <sup>a</sup> (14.5)	28 (10.2)	1 (1.2)
55–59	1,978 (7.5)	380 (4.8)	53 (11.4)	6 <sup>b</sup> (8.7)	17 (6.2)	2 (2.5)
60–64	1,173 (4.4)	218 (2.7)	47 <sup>b</sup> (10.1)	3 (4.3)	16 (5.8)	2 (2.5)
65–69	1,007 (3.8)	164 (2.1)	46 (9.9)	5 (7.2)	9 (3.3)	1 (1.2)
70–74	1,046 (3.9)	190 (2.4)	54 (11.6)	2 (2.9)	5 (1.8)	0 (0)
75–79	1,547 (5.8)	292 (3.7)	70 <sup>a</sup> (15.1)	7 (10.1)	4 (1.5)	2 (2.5)
80–84	639 (2.4)	143 (1.8)	27 (5.8)	9 (13.0)	3 (1.1)	0 (0)
≥ 85	234 (.9)	80 (1.0)	7 (1.5)	3 (4.3)	0 (0)	0 (0)
Total	26,531	7,932	464	69	273	80
Mean age	48.2	42.6	61.7	58.9	46.4	39.4

**Sources.** The data on all physicians are from Kosei rodo sho (2006) and represent aggregate statistics distributed by the Ministry of Health, Labor, and Welfare; the data on randomly sampled Japan Medical Association (JMA) members are from Iji koron sha (2004); the data on cosmetic surgeons are from Iji koron sha (2004) and a World Wide Web search for Tokyo physicians who advertise cosmetic procedures.

**Note.** Values are the number of physicians, with percentages in parentheses.

<sup>a</sup>Modal group.

<sup>b</sup>Median group.

statute prevents me from obtaining any income data based on tax liabilities in the future.

#### 4.3. Reference Groups

For a reference group against which to compare cosmetic surgeons, I turn to the JMA. I do this reluctantly, as the practice introduces several biases. The association does not include all physicians. While Japan has 270,371 licensed physicians, the JMA includes only 164,110 (61 percent).<sup>13</sup> While 34,463 physicians work in Tokyo, the JMA has only 19,418 (56 percent). Crucially, however, microlevel information on all Japanese doctors is simply unavailable.

Use of the JMA database introduces at least three biases relevant here. First—and most fundamental—JMA members are old. While the median male Tokyo physician is 45–49, the median male JMA member is 60–64. While the modal male Tokyo physician is 40–44, the modal JMA physician is 75–79. And while 17 percent of male Tokyo physicians are 65 or older, fully 44 percent of the male JMA members are (Table 1).

<sup>13</sup> Data in this section on total physicians are for 2004 and are from Kosei rodo sho (2006), which provides the information in aggregate form. Data on aggregate JMA membership for 2006 are from Nihon ishikai kaiinsu chosa [Survey of JMA members] (<http://www.med.or.jp/jma/gaiyou/mem20.html>).

Table 2  
Most Common Specialties for Male Physicians in Japan, 2004

Specialty	Percentage of All Male Physicians	Percentage Male in the Specialty
Internal medicine	29.2	85.1
General surgery	10.3	95.4
Orthopedic surgery	8.4	96.3
Pediatrics	4.7	68.8
Psychiatry	4.6	81.5
Gastroenterology	4.3	89.5
Cardiology	3.8	90.3

Source. Kosei rodo sho (2006).

Table 3  
Most Common Specialties for Female Physicians in Japan, 2004

Specialty	Percentage of All Female Physicians	Percentage Female in the Specialty
Internal medicine	26.0	14.9
Ophthalmology	10.9	36.8
Pediatrics	10.9	31.2
Dermatology	7.0	38.0
Psychiatry	5.3	18.5
Obstetrics/gynecology	5.3	21.8
Anesthesiology	4.4	29.1

Source. Kosei rodo sho (2006).

Second, the JMA disproportionately recruits its members from among those doctors who own and operate their own clinics or hospitals. According to the government, 76,897 (28 percent) of all Japanese physicians operate their own hospitals or clinics; of all Tokyo physicians, 8,878 (26 percent) do. As the JMA Web site claims 84,562 owner-operators in its membership, either the MHLW is undercounting owners or the JMA is overcounting. Either way, most owner-operators must have joined the JMA. Within Tokyo, the JMA claims 9,909 owner-operators. Again, most owner-operators must be in the JMA.

Last, JMA members are male. Women attended medical school less commonly decades ago and less frequently own hospitals or clinics today than do men. Given that JMA members are older and more likely than most doctors to own their own facilities, they are also more likely to be male. In Tokyo, 77 percent of all physicians are male. In my JMA sample, 87 percent are.

*Random Sample.* I first compare the cosmetic surgeons against a random sample of 495 JMA members. To address the greater likelihood that the JMA members own their own clinics (and differ on other omitted variables), as appropriate I limit the cosmetic surgeons in the comparison to those 181 physicians who are also members of the JMA. To address any bias caused by the greater likelihood that the JMA members are male, as appropriate I limit the comparison to men.

*Age-Matched Cohort.* I then compare cosmetic surgeons against a group of age-matched JMA physicians. As I noted above, JMA members are much older than cosmetic surgeons: only 84 cosmetic surgeons are over age 50, while only 73 JMA members in the random sample who are not cosmetic surgeons are under age 50.

To address the problems caused by the largely nonoverlapping ages of the physicians in the two data sets, I collect biographical and tax information on JMA doctors closer in age to the cosmetic surgeons. The cosmetic surgeons at the 25th and 75th age percentiles were born in 1955 and 1967, respectively. As a comparison group for these doctors, I assemble biographical and tax data on all 2,182 Tokyo JMA members born between those years. Again, as appropriate, I limit the comparisons to cosmetic surgeons who are members of the JMA or to those who are male.

*Board-Certified Physicians.* Doctors in the JMA are older than other doctors, and older doctors seem less likely than others to have obtained board certification. To explore certification patterns more closely, I collect biographical and tax information on all 1,133 board-certified Tokyo JMA doctors.

*Plastic Surgeons.* I assemble biographical and tax information on all 93 noncosmetic Tokyo plastic surgeons in the JMA. Subject to a few exceptions,<sup>14</sup> most cosmetic surgeons are plastic surgeons who perform medically nonessential operations for cosmetic purposes. In Japan, the distinction between cosmetic and plastic surgeons thus tracks the market in which they choose to sell: cosmetic surgeons sell plastic surgery in the uninsured, competitive market, while the noncosmetic plastic surgeons sell plastic surgery in the insured, price-regulated market. The similarity between the two groups consequently lets me contrast the qualifications and incomes of otherwise comparable physicians.

## 5. Talent and Expertise

In the following section, I consider whether talented physicians disproportionately select into cosmetic surgery and, once there, invest at higher levels in specialized expertise. I take talent first and expertise second. I begin with the description of the variables in Table 4, give summary statistics in Table 5, and turn then to the regression results in Table 6.

### 5.1. Summary Statistics

*Medical School.* I offer two indices of physician quality: whether a physician attended a public medical school and whether that physician spent time on the faculty of a university. All else being equal, the public Japanese medical schools are more selective and prestigious than the private ones. According to one national network of exam-preparation centers, only six private universities (led by

<sup>14</sup> Some cosmetic procedures (for example, treatment for burns and traffic accidents) are medically necessary by most standards.

Table 4  
Definition of Variables

Variable	Definition
Tax Liability 2004	The physician's tax liability (in thousands of yen) in 2004 if he or she is on the list of highest income taxpayers and 10,000 if not on the list
Tax Liability 2003	The physician's tax liability in 2003, conditional on appearing on the highest income taxpayers list in 2004
HIT	One if the doctor appeared on the list of highest income taxpayers in 2004 and zero otherwise
Cosmetic Surgery	One if a physician advertises services on the World Wide Web or in the Japan Medical Association directory as a Tokyo-area cosmetic surgeon and zero otherwise; the variable obviously does not capture expertise but does capture the decision to try to sell services in this market
Public University	One if a physician attended one of the 50 public medical schools and zero otherwise; the public schools are generally more selective than are the 30 private medical schools
JMA Member	One if a physician is a member of the Japan Medical Association and zero otherwise
Faculty Experience	One if a physician has worked on the faculty of a medical school (including service as a <i>joshu</i> [research associate] or an adjunct) and zero otherwise; the variable thus indicates whether the doctor impressed scholars enough for them to appoint him or her to the faculty
Hospital Physician	One if a physician is affiliated with a hospital and zero otherwise
Board Certification	One if a physician is a board-certified specialist and zero otherwise
Age	The physician's age estimated from the year of school graduation if the year of birth is unavailable
Sex	One if a physician is male and zero if female

Keio and Jikeikai Universities) maintain more selective medical schools than the bottom-ranked public university, Gunma University (see Yoyogi zeminaaru 2007).

Table 5 shows that, whereas 41 percent of the cosmetic surgeons studied medicine at a public university, only 35 percent of the JMA random sample did. Yet many of the private medical schools date from the 1970s, and most of the JMA physicians attended medical school long before that time. Among physicians born between 1955 and 1967, 42 percent of the cosmetic surgeons studied at a public medical school; only 29 percent of the JMA doctors did. And among the male doctors in the 1955–67 cohort, the contrast is more pronounced still: 46 percent of the cosmetic surgeons attended a public medical school, but only 31 percent of the other male doctors did.

One might expect subspecialties to attract the most talented doctors, but the advantages of cosmetic surgery may appear even against others in plastic surgery. While 41 percent of the cosmetic surgeons attended a public university, only 35 percent of the noncosmetic plastic surgeons did. While 42 percent of the cosmetic surgeons in the 1955–67 cohort attended a public school, only 29 percent of the other plastic surgeons in the cohort did. And while 46 percent of the male



Table 5  
Tokyo Physicians: Selected Summary Statistics for Cosmetic Surgeons and Japan Medical Association (JMA) Members

	Faculty Experience	Public University	Board Certification	HIT
Cosmetic surgeons	.228 (492)	.406 (392)	.432 (491)	.119 (495)
Random sample of physicians (excluding cosmetic surgeons)	.153 (489)	.352 (395)	.099 (486)	.139 (495)
Plastic surgeons (excluding cosmetic surgeons)	.061 (82)	.350 (80)	.160 (81)	.097 (93)
Born 1955–67:				
Cosmetic surgeons	.319 (182)	.418 (177)	.577 (182)	.154 (182)
All physicians (excluding cosmetic surgeons)	.121 (1,369)	.294 (2,079)	.268 (1,367)	.103 (2,099)
Plastic surgeons (excluding cosmetic surgeons)	.065 (31)	.294 (34)	.161 (31)	.088 (34)
Males born 1955–67:				
Cosmetic surgeons	.336 (146)	.455 (143)	.575 (146)	.185 (146)
All doctors (excluding cosmetic surgeons)	.124 (1,170)	.308 (1,820)	.264 (1,168)	.103 (1,839)
Plastic surgeons (excluding cosmetic surgeons)	.091 (22)	.333 (24)	.182 (22)	.042 (24)
Board-certified physicians born 1955–67:				
Cosmetic surgeons	.476 (105)	.373 (102)		.143 (105)
All doctors (excluding cosmetic surgeons)	.331 (366)	.201 (364)		.134 (366)
Plastic surgeons (excluding cosmetic surgeons)	.4 (5)	.2 (5)		0 (5)

Sources. Data on Japan Medical Association members are from Iji koron sha (2004); data on cosmetic surgeons are from Iji koron sha (2004) and a World Wide Web search; income data are from Tokyo shoko risaachi (2005).

Note. Data are mean values, with the number of observations in parentheses. HIT = highest income taxpayers.

Table 6  
Selection and Investment among Tokyo Physicians: Probit Regressions

	Board Certification				Cosmetic Surgery			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cosmetic Surgery	.369** (6.22)	.242** (5.44)	.357** (5.62)	.245** (4.97)				
Public University	-.033 (.88)	-.048* (1.74)	-.040 (1.03)	-.053* (1.82)	.049 (1.23)	.085** (4.25)	.160** (3.12)	.084** (4.06)
Faculty Experience	.281** (5.10)	.521** (15.94)	.250** (4.56)	.516** (14.56)	.173** (3.36)	.194** (6.09)	.151** (3.55)	.185** (5.50)
Hospital Physician	-.042 (.92)	-.038 (.56)	-.057 (1.29)	-.040 (.57)	-.137** (4.00)	.038 (.77)	.320* (2.21)	.016 (.34)
Age	.032* (2.36)	.063 (.64)	.035* (2.20)	.022 (.20)	-.016 (1.17)	-.046 (.85)	-.016 (.12)	-.025 (.43)
Age Squared	-.0003** (2.67)	-.0007 (.65)	-.0003* (2.42)	-.0002 (.19)	.0000 (.24)	.0003 (.55)	-.0002 (.11)	.0001 (.19)
Sex	-.073 (1.08)	-.037 (1.04)			-.026 (.45)	-.042* (1.74)	-.051 (.94)	
N	497	1,528	440	1,296	502	1,530	466	1,298

Sources. Data on Japan Medical Association members are from Iji koron sha (2004); data on cosmetic surgeons are from Iji koron sha (2004) and a World Wide Web search; income data are from Tokyo shoko risaichi (2005).

Note. The regressions give the marginal effect of the variable, calculated at the mean. The absolute values of the z-statistics are in parentheses. All regressions include a constant term. Regression (1) uses those cosmetic surgeons who were members of the JMA and the JMA random sample. Regression (2) uses all physicians in the 1955–67 age-matched data set. Regression (3) uses the same data set as (1) but limited to men. Regression (4) uses the same data set as (2) but limited to men. Regression (5) uses those cosmetic surgeons who were members of the JMA and the JMA random sample. Regression (6) uses all physicians in the 1955–67 age-matched data set. Regression (7) uses all physicians in the 1955–67 age-matched data set who were board certified. Regression (8) uses the same data set as (6) but limited to men.

\* Statistically significant at the 10 percent level.

\* Statistically significant at the 5 percent level.

\*\* Statistically significant at the 1 percent level.

cosmetic surgeons in that cohort attended a public school, only 31 percent of the other male plastic surgeons in the cohort did.<sup>15</sup>

*Faculty Experience.* As in the United States, medical schools in Japan typically recruit their faculty from among their best students. The Tokyo cosmetic surgeons were far more likely to have spent time on medical school faculties than were the others: 23 percent of the cosmetic surgeons had spent time on a university faculty; only 15 percent of the randomly sampled JMA members had done so.

Among physicians born in 1955–67, the contrast in faculty experience is greater. Of the cosmetic surgeons, 32 percent had served on a faculty, but only 12 percent of the noncosmetic JMA members had. Of the men in this age cohort, 34 percent of the cosmetic surgeons had served on a faculty, but only 12 percent of the others had. And of the board-certified physicians in the age cohort, 48 percent of the cosmetic surgeons had served on a faculty, but only 33 percent of the others had.

The differences persist even when noncosmetic plastic surgeons are used in the comparison. Of plastic surgeons not advertising cosmetic services, only 6 percent had faculty experience (in contrast to 23 percent of the cosmetic surgeons). Of those in the 1955–67 birth-year cohort, only 7 percent had faculty experience (in contrast to 32 percent of the cosmetic surgeons). And of the men in that cohort, only 9 percent had faculty experience (in contrast to 34 percent of the cosmetic surgeons).<sup>16</sup>

*Board Certification.* Cosmetic surgeons are much more likely than other doctors to obtain board certification. Most Japanese doctors never pursue board-certified expertise. Because they are able to fill their days with patients even without having certification, they do not bother getting it. Cosmetic surgeons, however, sell their services in a market in which price depends on perceived value, informational asymmetries plague physician claims about their expertise, and the patient pays the entire cost of any procedure.

In that environment, cosmetic surgeons apparently find it profitable both to invest in specialized expertise and to obtain third-party certification of that expertise. Among the randomly sampled JMA members, only 10 percent were board certified; among cosmetic surgeons, a full 43 percent were. In the 1955–67 birth-year cohort, the contrast was 27 percent (noncosmetic) to 58 percent (cosmetic). And among the men in that cohort, the contrast was 26 percent (noncosmetic) to 58 percent (cosmetic).

Again, the contrast continues even between the cosmetic surgeons and the noncosmetic plastic surgeons. Only 16 percent of all noncosmetic plastic surgeons

<sup>15</sup> Of these contrasts between cosmetic surgeons and noncosmetic plastic surgeons, the second is statistically significant at the 10 percent level by a one-tailed test. The others are not statistically significant. On the statistical significance of the differences between cosmetic surgeons and other doctors generally, see the results of the regressions in Table 6.

<sup>16</sup> All of the differences between cosmetic surgeons and noncosmetic plastic surgeons are statistically significant at the 1 percent level. On the significance of the differences between cosmetic surgeons and other doctors generally, see the results of the regressions in Table 6.

were board certified, while 43 percent of the cosmetic surgeons were. Only 16 percent of those in the 1955–67 birth-year cohort were certified, while 58 percent of the cosmetic surgeons were. And only 18 percent of the men in that cohort were certified, while 58 percent of the cosmetic surgeons were.<sup>17</sup>

The typical cosmetic surgeon obtained certification in general plastic (rather than specifically cosmetic) surgery. Within cosmetic surgery itself, two rival professional associations also certify expertise: the Japan Society of Aesthetic Plastic Surgery and the Japan Society of Aesthetic Surgery. Perhaps because of problems stemming from the competition between the two groups, or perhaps because certification from an older and better established group provides greater credibility, cosmetic surgeons tend to turn to plastic surgery for their certification.<sup>18</sup> Others in cosmetic medicine obtain certification in fields like dermatology or ophthalmology.

### 5.2. Regression Results

In Table 6, I regress Board Certification on a variety of physician characteristics. The coefficient on Cosmetic Surgery is overwhelmingly statistically significant: cosmetic surgeons are substantially more likely than others to obtain board certification. Those who served on a university faculty are similarly likely to obtain certification. These results hold true whether I compare JMA cosmetic surgeons against the randomly selected doctors (regression [1]), whether I compare all cosmetic surgeons born between 1955 and 1967 against JMA doctors in the same age cohort (regression [2]), and whether I limit the data to men (regressions [3] and [4]).

In Table 6, I also regress Cosmetic Surgery on physician characteristics. Because the decision to obtain board certification is endogenous to the decision to practice in cosmetic surgery, I omit the certification variable. As the summary statistics in Table 5 suggest, those who attended a public medical school and who served on a university faculty are more likely than other doctors to become cosmetic surgeons: the coefficient on Public University is strongly statistically significant in three of the four regressions, and the coefficient on Faculty Experience is strongly statistically significant in all of them. Note that this finding holds true even when I restrict the database to board-certified physicians (regression [7]).

<sup>17</sup> The differences between the cosmetic surgeons and the noncosmetic plastic surgeons are all statistically significant at the 1 percent level. On the significance of the differences between cosmetic surgeons and other doctors generally, see the results of the regressions in Table 6.

<sup>18</sup> For certification standards, see *Senmon i shikaku no shutoku narabi ni koshin joken* [Requirements for the acquisition or renewal of specialty certification] (<http://www.jsprs.or.jp/senmon/index.htm>). My search for cosmetic surgeons included a search of the certification rosters for the two medical societies specifically focused on cosmetic surgery. The certification roster for the Tokyo area was not available from the Japan Society for Plastic and Reconstructive Surgery, and I was left with only the certification information provided directly by the physicians themselves in the JMA directory or on their Web sites. Obviously, this situation creates a potential bias. In fact, however, most cosmetic surgeons were also board certified in a field other than cosmetic surgery. Even if I ignore certification by the two cosmetic surgery societies, the certification rate for cosmetic surgeons falls only from 43 percent to 40 percent.

## 6. Income

By the logic above, talented doctors may choose cosmetic surgery because of the opportunity to earn a financial return on their higher-than-average talent. Once in the field, they may invest in specialized expertise, again because of the chance to earn a return on that expertise. Earning returns that other physicians do not, they should report higher incomes. They do.

### 6.1. Summary Statistics

Some cosmetic surgeons are indeed rich. Of the more than 4,000 Tokyo doctors in the pooled data set, seven of the 10 with the highest incomes were cosmetic surgeons (Table 7). These high incomes are not an aberration. Eight of the 2004 top 10 (five of the seven cosmetic surgeons) earned enough in 2003 to appear on the HIT list (that is, make \$390,000 or more) that year too, and most of them placed high on the 2003 list. Indeed, Watabiki, Marumoto, Kitamura, Hirohi, and Nomura (three of them cosmetic surgeons and none of them older than 45) had already appeared on the HIT list at least four other times.

Not only do the most successful cosmetic surgeons dominate the top-10 income list but cosmetic surgeons in general appear on the HIT list in large numbers. Granted, according to the data presented in Table 5, 14 percent of the 495 randomly sampled JMA members appear on the list, but only 12 percent of all Tokyo cosmetic surgeons do. Recall, however, that the JMA members are much older than the cosmetic surgeons. Of those cosmetic surgeons in the JMA, 20 percent appear on the HIT list. Of physicians born between 1955 and 1967, 15 percent of the cosmetic surgeons make the list, but only 10 percent of the others do. Of the men born between 1955 and 1967, 19 percent of the cosmetic surgeons appear on the list, but only 10 percent of the others do.

Specialists earn more than generalists in the United States, of course, but Japanese cosmetic surgeons also earn more than their specialist peers. Take the plastic surgeons who choose not to advertise cosmetic services. Whereas 12 percent of the JMA cosmetic surgeons appear on the HIT list, only 10 percent of the other plastic surgeons do (Table 5). Within the 1955–67 birth-year cohort, 15 percent of the cosmetic surgeons appear on the list, but only 9 percent of the other plastic surgeons do. And among the men in that cohort, 19 percent of the cosmetic surgeons appear on the list, but only 4 percent of the other plastic surgeons do.<sup>19</sup>

### 6.2. Regression Results

In Table 8, I confirm this logic more systematically. For these regressions, I take as my dependent variable a physician's tax liability in 2004. Because for a

<sup>19</sup> The last difference between the cosmetic and noncosmetic plastic surgeons, but not the other physicians, is significant at the 1 percent level. For the statistical significance of the differences between cosmetic and noncosmetic surgeons generally, see the regression results in Table 8.

Table 7  
High-Income Physicians: Pooled Sample

Physician Rank, 2004	Physician Rank, 2003	Taxpayer Rank, 2004	Name	Primary Field	2004 Tax (1000s of Yen)	Age	Medical School	Board Certified
1		102	F. Umezawa	Cosmetic surgery	313,796	70	Keio	Yes
2	1	225	H. Watabiki	Cosmetic surgery	203,986	45	Kagoshima	No
3	3	281	K. Marumoto	Ophthalmology	174,493	42	Tokyo University	No
4	2	346	Y. Kitamura	Cosmetic surgery	159,647	41	Jikei	Yes
5	31	1,366	T. Hirohi	Cosmetic surgery	78,832	45	Yamanashi	No
6	4	1,584	Y. Komuro	Cosmetic surgery	73,558	46	Showa	No
7	14	2,019	Y. Ikeda	Cosmetic surgery	65,723	35	Kyorin	No
8		2,405	M. Boku	Cosmetic surgery	59,730			Yes
9	10	2,704	H. Oyama	Internal medicine	56,449	47	Teikyo	No
10	8	2,842	Y. Nomura	Surgery	54,916	44	Nihon	No

Sources. Data on Japan Medical Association members are from Iji koron sha (2004); data on cosmetic surgeons are from Iji koron sha (2004) and a World Wide Web search; income data are from Tokyo shoko risaachi (2005).

Table 8  
Determinants of Income for Tokyo Physicians: Tobit Regressions

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Cosmetic Surgery	11,883 <sup>+</sup> (1.76)	9,505* (2.55)	13,090** (3.19)	20,789** (4.64)	7,541 <sup>+</sup> (1.91)	1,839 (1.12)
Public University	18.5 (.00)	-3,564 (1.29)	-4,379 (1.44)	-3,512 (1.24)	-1,836 (.64)	-24,450 (1.36)
Faculty Experience	2,615 (.42)	1,374 (.38)	1,669 (.42)	3,038 (.81)	5,948 (1.58)	
Hospital Physician	5,216 (.82)	-7,485 (.99)	-6,580 (.82)	-5,764 (.75)	-1,590 (.22)	
Board Certification	-9,952 (1.41)	-3,719 (1.27)	-3,996 (1.22)	-3,936 (1.32)	-6,838* (2.17)	5,106 (.32)
Age	751 (.43)	14,578 (1.52)	19,352 <sup>+</sup> (1.80)	13,573 (1.37)	17,309 <sup>+</sup> (1.67)	51,938 (.90)
Age Squared	-12.0 (.82)	-160 (1.47)	-217 <sup>+</sup> (1.77)	-151 (1.35)	-187 (1.59)	-588 (.89)
Sex	12,481 (1.38)	4,821 (1.39)		3,299 (.95)	1,539 (.44)	58,849 <sup>+</sup> (1.91)
JMA Member						48,382** (2.78)
N	497	1,528	1,296	1,431	1,528	177

Sources. Data on Japan Medical Association (JMA) members are from Iji koron sha (2004); data on cosmetic surgeons are from Iji koron sha (2004) and a World Wide Web search; income data are from Tokyo shoko risaichi (2005).

Note. The regressions give the marginal effect of the variable calculated at the mean. Absolute values of the *t*-statistics are in parentheses. For all regressions except regression (5), the dependent variable is Tax Liability 2003. All regressions include a constant term. Regression (1) compares JMA cosmetic surgeons against a randomly sampled population of the JMA. Regressions (2)–(6) are limited to physicians born 1955–67. Regression (3) is further limited to males, regression (4) to JMA members, and regression (6) to cosmetic surgeons. Note that in regression (6), Tobit would not calculate the standard errors for Hospital Physician. The results of instrumental variable specifications (instrumenting Cosmetic Surgery with Age, Age Squared, and Sex) are reported in Ramseyer (2007, table 5).

<sup>+</sup> Statistically significant at the 10 percent level.

\* Statistically significant at the 5 percent level.

\*\* Statistically significant at the 1 percent level.

majority of the doctors I know only that they paid less than 10 million yen, I use a Tobit model.<sup>20</sup>

I begin with the contrast to the random sample of JMA physicians (regression [1]). Because JMA doctors differ from others along several unobserved dimensions (most important, ownership of a clinic), I limit cosmetic surgeons to those in the JMA.<sup>21</sup> Among JMA members, cosmetic surgeons do indeed pay higher taxes than the others do—about 12 million yen more. The results for the other variables are not statistically significant, although men probably earn more than women.

As I discussed earlier, however, the randomly sampled JMA doctors are much older than the cosmetic surgeons. Suppose then that we limit the data set to all physicians born between 1955 and 1967 (regression [2]). The statistical significance of the coefficient on Cosmetic Surgery dramatically increases. If we limit the data set to men born during this period, both the statistical significance and the economic magnitude of the coefficient increase further still (regression [3]). As one would expect, Age and Age Squared indicate that incomes increase with age, but at a declining rate. If we limit the cosmetic surgeons to JMA members (as we did in regression [1]) but maintain the 1955–67 birth-year restriction, the contrasts between cosmetic surgeons and the others again increase (regression [4]). And even if we use Tax Liability 2003 rather than Tax Liability 2004 as the dependent variable, cosmetic surgeons retain their advantage (regression [5]).<sup>22</sup>

Members of the JMA are much more likely than other physicians to own their own clinics. In turn, the taxable incomes of those who own their own clinics should include a return on the investments (both tangible and intangible) they have made in those establishments. Because they earn returns on investments that others have not made, they should earn higher incomes. In regression (6), I compare the incomes of cosmetic surgeons in the JMA against those not in the association. According to the results, among cosmetic surgeons born 1955–67, JMA members do indeed earn higher incomes than others do.

The largest puzzle in the results shown in Table 8 concerns the apparent absence of any premium to board certification. Instead, the coefficient on Board Certification is generally negative, and in one regression it is statistically significantly so. By logic, whether in a cosmetic field or not, physicians should invest in specialized expertise only if they earn a return on this investment. Because they earn a return that others do not, they should report higher incomes.

<sup>20</sup> A physician will choose a specialty with an eye to the expected income, of course, and this choice makes Cosmetic Surgery endogenous. To deal with the endogeneity, in regressions not reported here, I instrument Cosmetic Surgery by Age, Age Squared, and Sex. The results confirm the high incomes for cosmetic surgeons. The results appear in Ramseyer (2007, table 5).

<sup>21</sup> Without this limitation, the coefficient on Cosmetic Surgery is statistically insignificant, and this finding is consistent with the higher values for high-income tax for the random sample in Table 5.

<sup>22</sup> To explore whether outliers drive these results, I recalculated regressions (2), (3), and (4) with Logged Tax Liability as the dependent variable. The *t*-statistic on Cosmetic Surgery dropped to 1.9, 2.62, and 3.87, respectively. If I omit the five highest income physicians from the calculation, the *t*-statistic on Cosmetic Surgery drops to 1.19, 1.91, and 2.83, respectively.



Recall, however, that although no clinic ownership variable appears in the data, half of the JMA members own their clinics. What is more, given the government restrictions on new clinics (described above) and the stratospheric Japanese estate taxes on cash bequests, these clinic owners often transfer their clinics to their children before death. Plausibly, doctors who acquire clinics while young many choose to focus their efforts on learning to run the sometimes substantial business establishments. By contrast, the doctors who choose instead to become board certified may also be those without personal clinics. They may invest in their specialized expertise to compete against their peers with established clinics. If all of this is true, then a regression of income on Board Certification that omits a clinic ownership variable could easily yield no statistically significant coefficient on certification.

### 6.3. Implications

*Contrast with the United States.* Cosmetic surgeons earn high incomes in the United States as well, of course. They invest years in specialized training, and they earn a return that reflects in part the returns on that human capital investment (see, for example, Dranove and Satterthwaite 1991, p. 52). The situation is similar in Japan. Talented doctors enter the field, they acquire specialized skills, they certify those skills, and they earn a return that reflects their superior talent and expertise.

But the United States and Japan do differ, and the contrast appears not among cosmetic surgeons; instead, it appears among the other physicians. While cosmetic surgeons invest in board-certified expertise, other physicians do not. Even other physicians in plastic surgery—a field demanding roughly the same skills—do not. Cosmetic surgery attracts talented physicians. But, again, even plastic surgery—which presents the same intellectual challenges—does not.

In both countries, cosmetic surgeons earn incomes that reflect the talent and investments they bring to the job. Yet U.S. physicians in other fields invest heavily in specialized expertise too, while their Japanese peers invest much less. Predictably, given these conditions, although cosmetic surgeons earn high incomes in both countries, physicians in other fields earn relative incomes in Japan that bear no relation to their relative incomes in the United States.<sup>23</sup>

*Selection out of Medicine.* In fact, these data understate the extent to which the price controls distort career choices. Logically, the controls will not skew just a physician's choice of specialty: they will skew a talented student's more basic career choice. More specifically, they will steer the most talented science students away from any career in medicine.

<sup>23</sup> For the relative incomes of physicians in other fields in the two countries, see Ramseyer (2007, table 3). Cosmetic surgeons may be unusually talented in the United States as well (see Dranove and Satterthwaite 1991, p. 67; Marder and Willke 1991, p. 276). Yet in the United States, other subspecialties (for example, noncosmetic plastic surgery) would attract similarly talented physicians. In Japan, that apparently does not happen. On the recent increase in the popularity of cosmetic practice in the United States, see Singer (2008).

Speculative evidence (but it is only speculative; the question is obviously beyond the scope of this article) consistent with this broader effect appears in the relative attractiveness of engineering and medicine. Forty-seven universities maintain both engineering and medical schools. The seven worst universities have bad schools in both fields. But among the other 40, the relative attractiveness of medicine falls as the quality of the university rises.

Consider the correlation among the 40 universities between (i) the selectivity of the medical school and (ii) the ratio of the selectivity of the university's medical school to the selectivity of the university's engineering school (with selectivity measured by Yoyogi zeminaaru [2007]). The coefficient is strongly negative ( $-.60$ ) and statistically significant at more than the 99 percent level. The better the students at a university, the less attractive a medical career becomes when compared with an engineering career.

*Welfare Losses.* Do Japanese consumers lose when their best doctors migrate into cosmetic surgery? Perhaps cosmetic work yields large returns to unusually high levels of judgment, creativity, and expertise. Perhaps consumers perceive these large differences between high- and moderate-quality cosmetic surgery. And perhaps consumers value the highest quality work highly enough to pay the prices necessary to bring talented doctors into the field.

Unfortunately, we do not know—and we do not know because the Japanese health care market generates no comparable price signals. Consumers may value the difference between high- and moderate-quality work in neurosurgery too, but the universal insurance prevents them from bidding for the best surgeons. They may or may not want their best doctors in cosmetic surgery rather than neurosurgery, but under the current system we have no way to know.

And yet we have reason at least to suspect that Japanese consumers suffer a substantial welfare loss. To be sure, even if consumers did prefer to see their medical talent in neurosurgery rather than cosmetic surgery, they would not incur a large loss from the migration of 500 talented doctors into the latter. Instead, they potentially lose from the failure of the other 34,000 Tokyo doctors to sort themselves among the remaining fields by talent. In other words, consumers may well want their best doctors in some fields rather than others, but the universal health insurance prevents them from sending the price signals necessary to cause that sorting. Neither would consumers incur a large loss from the fact that the 500 cosmetic surgeons invest heavily in specialized expertise. Instead, they potentially lose from the failure of the other 34,000 to make analogous investments. In other words, consumers may well want their cardiologists and oncologists to invest in specialized skills too, but the current system prevents them from generating the price signals necessary to induce the investments.

## 7. Conclusions

In Japan, the government provides universal health insurance. Toward that end, it heavily subsidizes demand. Yet, as in the United States, it also limits the

supply of medical services with a rigid licensing requirement. Subsidizing demand while limiting supply raises market prices, and the Japanese government keeps costs down by suppressing prices by fiat. One effect is obvious and has been often noted: suppliers depreciate quality. Much the way that landlords let apartments deteriorate in rent-controlled cities, doctors depreciate quality in worlds with suppressed prices.

But the distortions caused by the cost suppression under universal health insurance are more basic, for they affect the very career choices physicians make. More specifically, they create an incentive for the most talented doctors to opt for sectors beyond the price controls, to invest in human capital specific to those sectors, and to certify that sector-specific expertise. Ironically, most of the sectors excluded from the Japanese insurance scheme are those deemed the least medically “necessary,” and cosmetic surgery is one. Ironically, the price distortions drive the brightest Japanese doctors into cosmetic surgery, where they invest heavily in cosmetic expertise and certify that expertise to a level never seen in the medically necessary sectors.

Cosmetic surgeons earn high incomes in the United States as well of course. In large part, their incomes represent the returns on the human capital investments they make in their specialty. The point is not that Japanese cosmetic surgeons earn a premium unavailable here. The point is that by operating beyond the scope of the universal health insurance, they can profitably do what so few other Japanese physicians can cost-effectively do: earn a return on their talent and invest in field-specific training.

In most Japanese medical fields, price controls preclude physicians from earning large enough returns on their training to make any serious specialization worthwhile. In cosmetic surgery, however, Japanese physicians face a competitive market. In response to the market price signals, they specialize, train, and certify their expertise. In virtually every other field, they do not.

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